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	which takes two argument is used to initialized real and imag to two different values.				
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EXPERIMENT - 1

Object Oriented Programming Lab

Aim

Write a program to find whether a number is prime or not.

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EXPERIMENT – 1

Aim:

Write a program to find whether a number is prime or not.

Source Code:

```
#include <iostream>
#include <math.h>
using namespace std;

bool isPrime(int n){
    if (n < 2) return false;
    for (int i = 2; i < n; ++i) {
        if ((n % i) == 0) return false;
    }
    return true;
}

bool isPrime1(int n){
    if (n < 2) return false;
    if (n % 2 == 0) return false;
    for (int i = 2; i < sqrt(n); ++i) {
        if ((n % i) == 0) return false;
    }
    return true;
}

int main() {
    cout << "Enter the number you wan to check whether prime or not";
    int n;
    cin >> n;
    cout << "result = " << isPrime(n);
    cout << "result = " << isPrime1(n);
    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ isPrime.cpp -o isPrime } ; if ($?) { .\isPrime }
Enter the number you wan to check whether prime or not 23
result = 1
result = 1
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ isPrime.cpp -o isPrime } ; if ($?) { .\isPrime }
Enter the number you wan to check whether prime or not 18
result = 0
result = 0
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ isPrime.cpp -o isPrime } ; if ($?) { .\isPrime }
Enter the number you wan to check whether prime or not 101
result = 1
result = 1
PS D:\sem 4\cpp\oops>
```

EXPERIMENT - 2

Object Oriented Programming Lab

Aim

Write a program to take name, address as character string, age as int, salary as float and contains inline function to set the values and display them.

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EXPERIMENT – 2

Aim:

Write a program to take name, address as character string, age as int, salary as float and contains inline function to set the values and display them.

Source Code:

```
#include <iostream>
#include <string>
using namespace std;

class details{
    public:
        string name;
        string address;
        int age;
        float salary;

    void getData() {
        cout << "Enter name" << endl;
        getline(cin, name);
        cout << "Enter address" << endl;
        getline(cin, address);
        cout << "Enter age" << endl;
        cin >> age;
        cout << "Enter salary" << endl;
        cin >> salary;
    }

    void showdata();

};

void details :: showdata(){
    cout << "details of employee \n";
    cout << "name: " << name << endl;
    cout << "address: " << address << endl;
    cout << "age: " << age << endl;
    cout << "salary: " << salary << endl;
}
```

```
int main(){
    details d;
    d.getData();
    d.showdata();
    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ employeeDetails.cpp -o employeeDetails } ; if ($?) { .\employeeDetails }
Enter name
Syeda Reeha Quasar
Enter address
Rohini, New Delhi - 110089
Enter age
20
Enter salary
700000
details of employee
name: Syeda Reeha Quasar
address: Rohini, New Delhi - 110089
age: 20
salary: 700000
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ employeeDetails.cpp -o employeeDetails } ; if ($?) { .\employeeDetails }
Enter name
reeha
Enter address
Rohini, Delhi
Enter age
20
Enter salary
900000
details of employee
name: reeha
address: Rohini, Delhi
age: 20
salary: 900000
PS D:\sem 4\cpp\oops>
```

EXPERIMENT - 3

Object Oriented Programming Lab

Aim

Using concept of function overloading, write function for calculating area of triangle, circle and rectangle.

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EXPERIMENT – 3

Aim:

Using concept of function overloading, write function for calculating area of triangle, circle and rectangle.

Source Code:

```
#include <iostream>
using namespace std;

int area(int l, int b){
    return l * b;
}

float area(float r){
    return 3.14 * r * r;
}

float area(float b, float h){
    return (b * h)/2;
}

int main(){
    int l, b;
    float r, ba, he;
    cout << "Enter length and breadth of rectangle" << endl;
    cin >> l >> b;
    cout << "Area of rectangle is: " << area(l, b) << endl;
    cout << "Enter radius for circle"<<endl;
    cin >> r;
    cout << "Area of circle is: " << area(r) << endl;
    cout << "Enter base and height of triangle" << endl;
    cin >> ba >> he;
    cout << "Area of triangle is: " << area(ba, he) << endl;
    return 0;
}
```

Output:


PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ Areas.cpp -o Areas } ; if ($?) { .\Areas }
Enter length and breadth of rectangle
2 3
Area of rectangle is: 6
Enter radius for circle
2
Area of circle is: 12.56
Enter base and height of triangle
12 3
Area of triangle is: 18
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ Areas.cpp -o Areas } ; if ($?) { .\Areas }
Enter length and breadth of rectangle
3 12
Area of rectangle is: 36
Enter radius for circle
5
Area of circle is: 78.5
Enter base and height of triangle
4 12
Area of triangle is: 24
PS D:\sem 4\cpp\oops>

EXPERIMENT - 4

Object Oriented Programming Lab

Aim

Create a class student which have data members as name, branch, roll no., age, sex, five subjects. Display the name of the student and his percentage who has more than 70%.

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EXPERIMENT – 4

Aim:

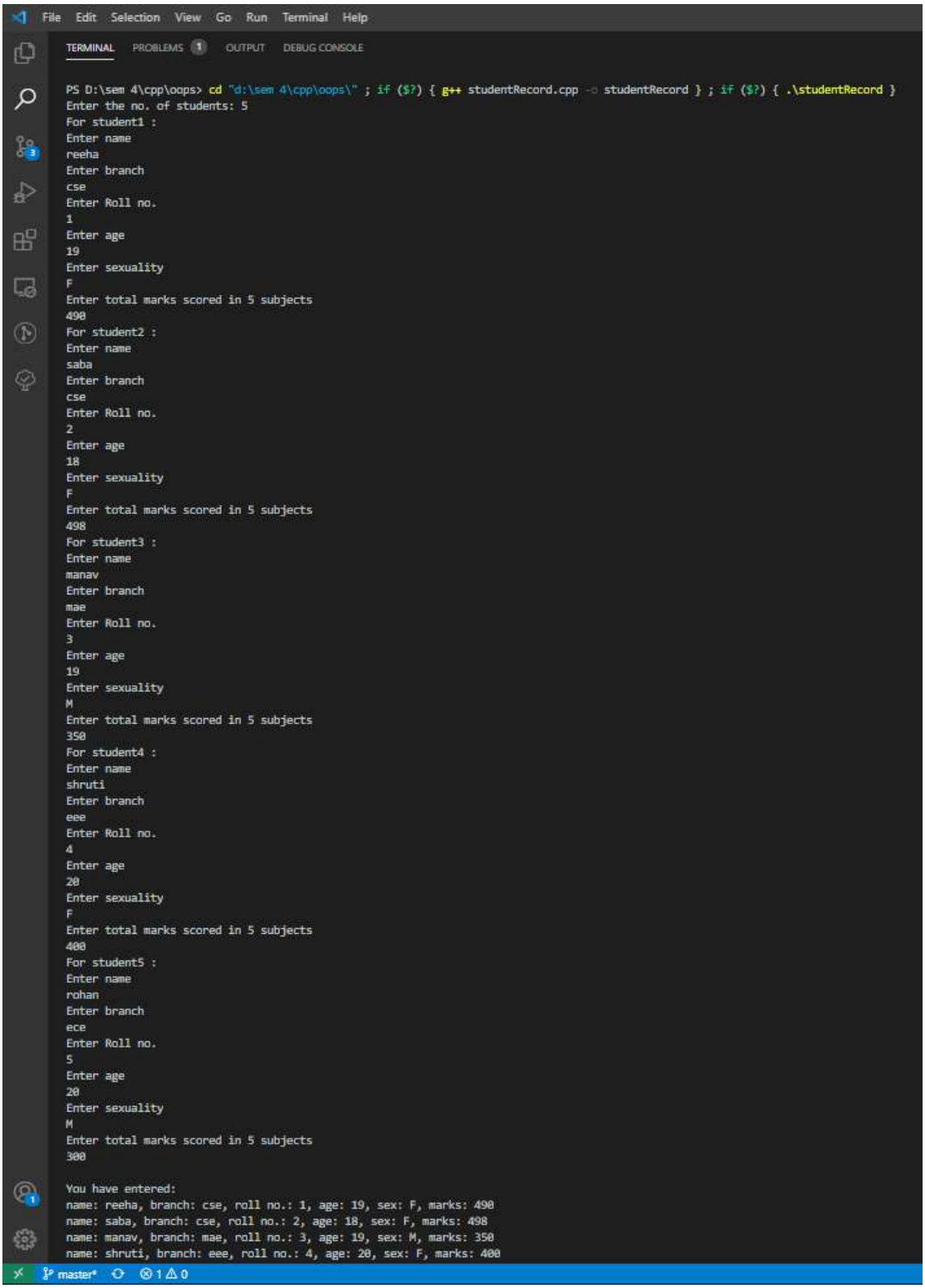
Create a class student which have data members as name, branch, roll no., age, sex and marks in five subjects. Display the name of the student and his percentage who has more than 70%.

Source Code:

```
#include <iostream>
#include <string>

using namespace std;

class studentRecord{
    private:
        string name;
        string branch;
        int rollNo;
        int age;
        char sex[15];
        float marks;

    public:
        void getDetails();
        void check();
        void showDetails();
        void details();
};

void studentRecord::getDetails(){
    cout << "Enter name" << endl;
    cin >> name;
    cout << "Enter branch" << endl;
    cin >> branch;
    cout << "Enter Roll no. "<< endl;
    cin >> rollNo;
    cout << "Enter age" << endl;
    cin >> age;
    cout << "Enter sexuality" << endl;
    cin >> sex;
    cout << "Enter total marks scored in 5 subjects" << endl;
```

```
    cin >> marks;
}

void studentRecord::showDetails(){
    cout << "Name: " << name << endl;
    cout << "Percentage: " <<  (marks/5) << "%" << endl;
}

void studentRecord::check(){
    if (((marks/5)) > 70) {
        showDetails();
    }
}

void studentRecord::details(){
    cout << "name: " << name << ", branch: " << branch << ", roll no.: " << rollN
o << ", age: " << age << ", sex: " << sex << ", marks: " << marks << endl;
}

int main(int argc, char const *argv[]){
    int students;
    cout << "Enter the no. of students: ";
    cin >> students;
    studentRecord studentsArr[students];
    for (int i = 0; i < students; ++i) {
        cout << "For student" << i + 1 << " :" << endl;
        studentsArr[i].getDetails();
    }

    cout << "\nYou have entered:" << endl;
    for (int i = 0; i < students; i++) {
        studentsArr[i].details();
    }

    cout << "\n\n\n" << endl;

    cout << "Students having marks greater than 70% are: " << endl;
    for (int i = 0; i < students; i++) {
        studentsArr[i].check();
    }
}
```

Output:


File Edit Selection View Go Run Terminal Help
TERMINAL PROBLEMS 1 OUTPUT DEBUG CONSOLE
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ studentRecord.cpp -o studentRecord } ; if ($?) { .\studentRecord }
Enter the no. of students: 5
For student1 :
Enter name
reeha
Enter branch
cse
Enter Roll no.
1
Enter age
19
Enter sexuality
F
Enter total marks scored in 5 subjects
490
For student2 :
Enter name
saba
Enter branch
cse
Enter Roll no.
2
Enter age
18
Enter sexuality
F
Enter total marks scored in 5 subjects
498
For student3 :
Enter name
manav
Enter branch
mae
Enter Roll no.
3
Enter age
19
Enter sexuality
M
Enter total marks scored in 5 subjects
350
For student4 :
Enter name
shruti
Enter branch
eee
Enter Roll no.
4
Enter age
20
Enter sexuality
F
Enter total marks scored in 5 subjects
400
For student5 :
Enter name
rohan
Enter branch
ece
Enter Roll no.
5
Enter age
20
Enter sexuality
M
Enter total marks scored in 5 subjects
300
You have entered:
name: reeha, branch: cse, roll no.: 1, age: 19, sex: F, marks: 490
name: saba, branch: cse, roll no.: 2, age: 18, sex: F, marks: 498
name: manav, branch: mae, roll no.: 3, age: 19, sex: M, marks: 350
name: shruti, branch: eee, roll no.: 4, age: 20, sex: F, marks: 400
master* ⊗1 ⚠0

```
You have entered:
name: reeha, branch: cse, roll no.: 1, age: 19, sex: F, marks: 490
name: saba, branch: cse, roll no.: 2, age: 18, sex: F, marks: 498
name: manav, branch: mae, roll no.: 3, age: 19, sex: M, marks: 350
name: shruti, branch: eee, roll no.: 4, age: 20, sex: F, marks: 400
name: rohan, branch: ece, roll no.: 5, age: 20, sex: M, marks: 300



Students having marks greater than 70% are:
Name: reeha
Percentage: 98%
Name: saba
Percentage: 99.6%
Name: shruti
Percentage: 80%
PS D:\sem 4\cpp\oops>
```

EXPERIMENT - 5

Object Oriented Programming Lab

Aim

Write a program for multiplication of two matrices using OOP.

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EXPERIMENT – 5

Aim:

Write a program for multiplication of two matrices using OOP.

Source Code:

```
#include <iostream>

using namespace std;

class MatrixMultiplication{
    public:
        int a[3][3];
        int b[3][3];
        int c[3][3];

        void InputMatrix();
        void multiply();
        void result();
};

void MatrixMultiplication::InputMatrix(){
    cout << "Enter the values for the first 3 x 3 matrix row wise" << endl;
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++)
        {
            cin >> a[i][j];
        }
    }
    cout << "Enter the values for the second 3 x 3 matrix row wise" << endl;
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            cin >> b[i][j];
        }
    }
}

void MatrixMultiplication::multiply(){
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            c[i][j]=0;
```

```
            for (int k = 0; k < 3; k++) {
                c[i][j] += a[i][k] * b[k][j];
            }
        }
    }
}

void MatrixMultiplication::result(){
    cout << "The Resultant Matrix is: \n";
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            cout << " " << c[i][j];
        }
        cout << endl;
    }
}

int main(){
    MatrixMultiplication x;
    cout << "Program to multiply 2 3X3 matrices: " << endl;
    x.InputMatrix();
    x.multiply();
    x.result();
    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ matrixMultiplications.cpp -o matrixMultiplications } ; if ($?) { .\matrixMult
iplications }
Program to multiply 2 3X3 matrices:
Enter the values for the first 3 x 3 matrix row wise
1 2 3
4 5 6
7 8 9
Enter the values for the second 3 x 3 matrix row wise
2 2 2
2 2 2
2 2 2
The Resultant Matrix is:
 12 12 12
 30 30 30
 48 48 48
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ matrixMultiplications.cpp -o matrixMultiplications } ; if ($?) { .\matrixMult
iplications }
Program to multiply 2 3X3 matrices:
Enter the values for the first 3 x 3 matrix row wise
1 2 3
4 5 6
7 8 9
Enter the values for the second 3 x 3 matrix row wise
1 2 3
4 5 6
7 8 9
The Resultant Matrix is:
 30 36 42
 66 81 96
 102 126 150
PS D:\sem 4\cpp\oops>
```

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ matrixMultiplications.cpp -o matrixMultiplications } ; if ($?) { .\matrixMultiplications }
Program to multiply 2 3X3 matrices:
Enter the values for the first 3 x 3 matrix row wise
1 2 3
4 5 6
7 8 9
Enter the values for the second 3 x 3 matrix row wise
1 1 1
1 1 1
1 1 1
The Resultant Matrix is:
 6 6 6
 15 15 15
 24 24 24
PS D:\sem 4\cpp\oops>
```

EXPERIMENT - 6

Object Oriented Programming Lab

Aim

To create a class TIME with members hours, minutes and seconds. Take input, add two-time objects and passing objects to function and display the result.

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EXPERIMENT – 6

Aim:

To create a class TIME with members hours, minutes and seconds. Take input, add two-time objects and passing objects to function and display the result.

Source Code:

```
#include <iostream>

using namespace std;

class times{

    int seconds, minutes, hours;


    public:

        void getTime(int h, int m, int s){

            hours = h;

            minutes = m;

            seconds = s;

        }


        void putTime(){

            cout << "The time is " << hours << " hours " << minutes << " minutes
" << seconds << " seconds\n";

        }


        void sum(times, times);

};


void times::sum(times t1, times t2){

    seconds = t1.seconds + t2.seconds;

    minutes = seconds / 60;
```

```
    seconds %= 60;
    minutes += t1.minutes + t2.minutes;
    hours = minutes / 60;
    minutes %= 60;
    hours += t1.hours + t2.hours;
}

int main(){
    times t1, t2, t3;
    t1.getTime(1, 2, 30);
    t2.getTime(4, 5, 55);
    t3.sum(t1, t2);
    t1.putTime();
    t2.putTime();
    t3.putTime();
    int hour1, minute1, second1, hour2, minute2, second2;
    cout << "Time - 1 \n Enter Hour, minute and second " << endl;
    cin >> hour1 >> minute1 >> second1;
    cout << "Time - 2 \n Enter Hour, minute and second " << endl;
    cin >> hour2 >> minute2 >> second2;
    t1.getTime(hour1, minute1, second1);
    t2.getTime(hour2, minute2, second2);
    t3.sum(t1, t2);
    t1.putTime();
    t2.putTime();
    t3.putTime();
    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ time.cpp -o time } ; if ($?) { .\time }
The time is 1 hours 2 minutes 30 seconds
The time is 4 hours 5 minutes 55 seconds
The time is 5 hours 8 minutes 25 seconds
PS D:\sem 4\cpp\oops>
```

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ time.cpp -o time } ; if ($?) { .\time }
The time is 1 hours 2 minutes 30 seconds
The time is 4 hours 5 minutes 55 seconds
The time is 5 hours 8 minutes 25 seconds
Time - 1
 Enter Hour, minute and second
6 25 30
Time - 2
 Enter Hour, minute and second
7 30 50
The time is 6 hours 25 minutes 30 seconds
The time is 7 hours 30 minutes 50 seconds
The time is 13 hours 56 minutes 20 seconds
PS D:\sem 4\cpp\oops>
```

EXPERIMENT - 7

Object Oriented Programming Lab

Aim

To create a function power to raise a number m to a power n. The function takes double value for m and integer value for n. Use default value for n to make the function. Calculate the squares when this argument is omitted.

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EXPERIMENT – 7

Aim:

To create a function power to raise a number m to a power n. The function takes double value for m and integer value for n. Use default value for n to make the function. Calculate the squares when this argument is omitted.

Source Code:

```
#include <iostream>
using namespace std;


float power(double base, int powr = 0){
    if (powr == 0) {
        return base * base;
    }
    float res = 1;
    for (int i = 0; i < powr; ++i) {
        res *= base;
    }
    return res;
}

int main(){
    int powr;
    double base;
    cout << "Enter the number whose power you want to calculate:- " << endl;
    cin >> base;
    cout << "Enter the power of the base:- " << endl;
    cin >> powr;
```

```
    cout << "The result of " << base << " to the power " << powr << " is " << pow
er(base, powr) << endl;

    return 0;

}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ power.cpp -o power } ; if ($?) { .\power }
Enter the number whose power you want to calculate:-
2
Enter the power of the base:-
18
The result of 2 to the power 18 is 262144
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ power.cpp -o power } ; if ($?) { .\power }
Enter the number whose power you want to calculate:-
12
Enter the power of the base:-
12
The result of 12 to the power 12 is 8.9161e+12
PS D:\sem 4\cpp\oops>
```

EXPERIMENT - 8

Object Oriented Programming Lab

Aim

Write a program to find the greatest of two given numbers in two different classes using friend function.

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EXPERIMENT – 8

Aim:

Write a program to find the greatest of two given numbers in two different classes using friend function.

Source Code:

```
#include <iostream>
using namespace std;

class ClassB;

class ClassA {
    private:
        int numA;
        friend int greatest(ClassA, ClassB);

    public:
        void input() {
            cout << "Enter number for class A:";
            cin >> numA;
        }
};

class ClassB {
    private:
        int numB;
        friend int greatest(ClassA, ClassB);

    public:
```

```
        void input() {
            cout << "Enter number for class B:";
            cin >> numB;
        }
};

int greatest(ClassA objectA, ClassB objectB) {
    return max(objectA.numA, objectB.numB);
}

int main() {
    ClassA objectA;
    ClassB objectB;
    objectA.input();
    objectB.input();
    cout << "Greatest: " << greatest(objectA, objectB);
    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ greatest.cpp -o greatest } ; if ($?) { .\greatest }
Enter number for class A: 23
Enter number for class B: 13
Greatest: 23
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ greatest.cpp -o greatest } ; if ($?) { .\greatest }
Enter number for class A: 22
Enter number for class B: 10
Greatest: 22
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ greatest.cpp -o greatest } ; if ($?) { .\greatest }
Enter number for class A: 02
Enter number for class B: 20
Greatest: 20
PS D:\sem 4\cpp\oops>
```

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ greatest.cpp -o greatest } ; if ($?) { .\greatest }
Enter number for class A: 23
Enter number for class B: 13
Greatest: 23
```

EXPERIMENT - 9

Object Oriented Programming Lab

Aim

Write a program to find the biggest of three number using Friend Function.

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EXPERIMENT – 9

Aim:

Write a program to find the biggest of three number using Friend Function.

Source Code:

```
#include <iostream>
using namespace std;

class threeNumbers{
    private:
        int x, y, z;

    public:
        void input(){
           cout << "Enter three numbers: ";
           cin >> x >> y >> z;
        }

        friend void findLargest(threeNumbers t);
};

void findLargest(threeNumbers t){
    if (t.x > t.y && t.x > t.z) {
        cout << "Largest is:" << t.x;
    }
    else if (t.y > t.z) {
        cout << "Largest is:" << t.y;
    }
```

```
    else {
        cout << "Largest is:" << t.z;
    }
}

int main(){
    threeNumbers t;
    t.input();
    findLargest(t);
    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ largestFriend.cpp -o largestFriend } ; if ($?) { .\largestFriend }
Enter three numbers: 12 23 10
Largest is:23
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ largestFriend.cpp -o largestFriend } ; if ($?) { .\largestFriend }
Enter three numbers:
10
20
30
Largest is:30
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ largestFriend.cpp -o largestFriend } ; if ($?) { .\largestFriend }
Enter three numbers: 220 234 890
Largest is:890
PS D:\sem 4\cpp\oops>
```

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ largestFriend.cpp -o largestFriend } ; if ($?) { .\largestFriend }
Enter three numbers:
10
23
45
Largest is:45
```

EXPERIMENT - 10

Object Oriented Programming Lab

Aim

Write a program to find the sum of two numbers declared in a class and display the numbers and sum using friend class.

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4C7

EXPERIMENT – 10

Aim:

Write a program to find the sum of two numbers declared in a class and display the numbers and sum using friend class.

Source Code:

```
#include <iostream>
using namespace std;

class twoNum{
    private:
        int a, b;

    public:
        void input(){
           cout << "Enter 2 numbers: ";
           cin >> a >> b;
        }

        friend void sum(twoNum t);
};

void sum(twoNum t){
    cout << "First number is: " << t.a << endl;
    cout << "Second number is: " << t.b << endl;
    cout << "Sum of these numbers is " << t.a + t.b << endl;
}

int main(){
```

```
    twoNum t;
    t.input();
    sum(t);
    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ friendSum.cpp -o friendSum } ; if ($?) { .\friendSum }
Enter 2 numbers: 12 8
First number is: 12
Second number is: 8
Sum of these numbers is 20
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ friendSum.cpp -o friendSum } ; if ($?) { .\friendSum }
Enter 2 numbers: 23 16
First number is: 23
Second number is: 16
Sum of these numbers is 39
PS D:\sem 4\cpp\oops>
```

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ friendSum.cpp -o friendSum } ; if ($?) { .\friendSum }
Enter 2 numbers:
13
23
First number is: 13
Second number is: 23
Sum of these numbers is 36
PS D:\sem 4\cpp\oops>
```

EXPERIMENT - 11

Object Oriented Programming Lab

Aim

Write a program to demonstrate the use of friend function with Inline assignment.

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EXPERIMENT – 11

Aim:

Write a program to demonstrate the use of friend function with Inline assignment.

Source Code:

```
#include <iostream>
using namespace std;

class threeNumbers{
    private:
        int x, y, z;

    public:
        void input(){
           cout << "Enter three numbers: ";
           cin >> x >> y >> z;
        }

        friend inline void findLargest(threeNumbers t);
};

inline void findLargest(threeNumbers t){
    if (t.x > t.y && t.x > t.z) {
        cout << "Largest is:" << t.x;
    }
    else if (t.y > t.z) {
        cout << "Largest is:" << t.y;
    }
```

```
    else {
        cout << "Largest is:" << t.z;
    }
}

int main(){
    threeNumbers t;
    t.input();
    findLargest(t);
    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ inlineFriend.cpp -o inlineFriend } ; if ($?) { .\inlineFriend }
Enter three numbers: 23 45 32
Largest is:45
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ inlineFriend.cpp -o inlineFriend } ; if ($?) { .\inlineFriend }
Enter three numbers: 23 45 34
Largest is:45
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ inlineFriend.cpp -o inlineFriend } ; if ($?) { .\inlineFriend }
Enter three numbers:
12
4
23
Largest is:23
PS D:\sem 4\cpp\oops>
```

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ inlineFriend.cpp -o inlineFriend } ; if ($?) { .\inlineFriend }
Enter three numbers: 2 4 5
Largest is:5
```

EXPERIMENT - 12

Object Oriented Programming Lab

Aim

Write a program to perform addition of two complex numbers using constructor overloading. The first constructor which takes no argument is used to create objects which are not initialized, second which takes one argument is used to initialize real and image parts to equal values and third which takes two argument is used to initialized real and image to two different values.

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EXPERIMENT – 12

Aim:

Write a program to perform addition of two complex numbers using constructor overloading. The first constructor which takes no argument is used to create objects which are not initialized, second which takes one argument is used to initialize real and image parts to equal values and third which takes two argument is used to initialized real and image to two different values.

Source Code:

```
#include <iostream>
using namespace std;

class Complex{
    public:
        int real, imaginary; //declaration of variables to be used

        // Empty Constructor
        Complex(){}

        // Constructor to accept real and imaginary part
        Complex(int r, int i){
            real = r;
            imaginary = i;
        }

        // func for adding two complex number
        Complex addComp(Complex C1, Complex C2){
            Complex res;
            res.real = C1.real + C2.real;
            res.imaginary = C1.imaginary + C2.imaginary;
            return res;
        }
};

int main(){
    // // complex num 1
    // Complex C1(3, 2);
    // cout << "Complex number 1 : " << C1.real << " + " << C1.imaginary << "i" <
<endl;
```

```
    // // complex Num 2
    // Complex C2(9, 5);
    // cout << "Complex number 2 : " << C2.real << " + " << C2.imaginary << "i" <
< endl;

    // Complex C3;
    // C3 = C3.addComp(C1, C2);

    // cout << "Sum of complex number : " << C3.real << " + " << C3.imaginary <<
"i" << endl;

    int c1, r1, c2, r2;
    cout << "Enter real and imaginary parts of first complex no. " << endl;
    cin >> c1 >> r1;
    cout << "Enter real and imaginary parts of second complex no. " << endl;
    cin >> c2 >> r2;
    Complex C1(c1, r1);
    cout << "Complex number 1 : " << C1.real << " + " << C1.imaginary << "i" <<en
dl;

    // complex Num 2
    Complex C2(c2, r2);
    cout << "Complex number 2 : " << C2.real << " + " << C2.imaginary << "i" << e
ndl;

    Complex C3;
    C3 = C3.addComp(C1, C2);

    cout << "Sum of complex number : " << C3.real << " + " << C3.imaginary << "i"
 << endl;

}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ additionComplexNumConstructor.cpp -o additionComplexNumConstructor } ; if
 ($?) { .\additionComplexNumConstructor }
Enter real and imaginary parts of first complex no.
3 5
Enter real and imaginary parts of second complex no.
10 7
Complex number 1 : 3 + 5i
Complex number 2 : 10 + 7i
Sum of complex number : 13 + 12i
PS D:\sem 4\cpp\oops>
```

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ additionComplexNumConstructor.cpp -o additionComplexNumConstructor } ; if
 ($?) { .\additionComplexNumConstructor }
Complex number 1 : 3 + 2i
Complex number 2 : 9 + 5i
Sum of complex number : 12 + 7i
PS D:\sem 4\cpp\oops>
```

```
PS D:\sem 4\cpp\oops> .\additionComplexNumConstructor
Enter real and imaginary parts of first complex no.
7 10
Enter real and imaginary parts of second complex no.
29 3
Complex number 1 : 7 + 10i
Complex number 2 : 29 + 3i
Sum of complex number : 36 + 13i
```

EXPERIMENT - 13

Object Oriented Programming Lab

Aim

Write a program to enter any number and find its factorial using constructor.

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EXPERIMENT – 13

Aim:

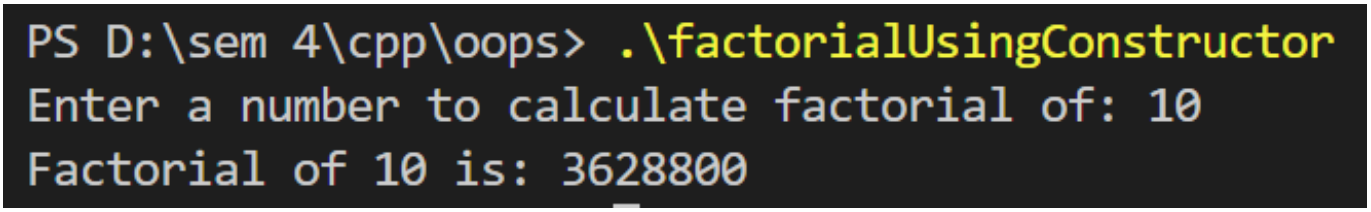
Write a program to enter any number and find its factorial using constructor.

Source Code:

```
#include<iostream>
using namespace std;

class factorial{
    int n, i, f;

    public:
        factorial(){
            cout << "Enter a number to calculate factorial of: ";
            cin>>n;

            f = 1;
            for (i = 1; i <= n; i++) {
                f = f * i;
            }
        }

        void executeFac() {
            cout << "Factorial of " << n << " is: " << f;
        }
};

int main() {

    factorial factObj1;
    factObj1.executeFac();

    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ factorialUsingConstructor.cpp -o factorialUsingConstructor } ; if ($?) {
.\factorialUsingConstructor }
Enter a number to calculate factorial of: 6
Factorial of 6 is: 720
```



EXPERIMENT - 14

Object Oriented Programming Lab

Aim

Write a program to generate a Fibonacci series using Copy Constructor.

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EXPERIMENT – 14

Aim:

Write a program to generate a Fibonacci series using Copy Constructor.

Source Code:

```
#include <iostream>
using namespace std;

class fibonacci{
    private:
        unsigned long int f0, f1, fib;

    public :
        fibonacci(){
            f0 = 0;
            f1 = 1;
            fib = f0 + f1;
        }

        void update(){
            f0 = f1;
            f1 = fib;
            fib = f0 + f1;
        }

        void displayFib(int upto){
            for (int i = 0; i <= upto; i++) {
                cout << fib << "  ";
                update();
            }
        }
}; //end of class construction


int main(){
    fibonacci fibObj;
    int upto;
    cout << "Enter the number uptill you want Fibobnacci to be listed: ";
    cin >> upto;
    cout << endl;
```

```
    fibObj.displayFib(upto);
    cout << endl;

    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ fibonacciCopyConstructor.cpp -o fibonacciCopyConstructor } ; if ($?) { .\
fibonacciCopyConstructor }
Enter the number uptill you want Fibobnacci to be listed: 10

1  2  3  5  8  13  21  34  55  89  144
```

```
PS D:\sem 4\cpp\oops> .\fibonacciCopyConstructor
Enter the number uptill you want Fibobnacci to be listed: 15

1  2  3  5  8  13  21  34  55  89  144  233  377  610  987  1597
```

```
PS D:\sem 4\cpp\oops> .\fibonacciCopyConstructor
Enter the number uptill you want Fibobnacci to be listed: 5

1  2  3  5  8  13
```